



Government of **Western Australia**  
Department of **Health**

# Hepatitis C treatment uptake in WA

Initiations of new treatment for chronic  
hepatitis C, March to September 2016

## **Acknowledgements**

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## **Disclaimer**

Every endeavour has been made to ensure that the information provided in this document was accurate at the time of writing. However, infectious disease testing and notifications data are continuously updated and subject to change. As no formal statistical testing has been conducted, some caution should be taken in interpreting differences and trends in this report.

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## Executive summary

On 1 March 2016, new direct acting antiviral (DAA) oral regimens were listed on the Pharmaceutical Benefits Scheme (PBS) for the treatment of chronic hepatitis C infection (HCV). The aim of this baseline report is to describe the number of people in Western Australia (WA) who initiated DAA treatment for chronic HCV from 1 March to 30 September 2016 by patient demographics, regimen, dispensing and prescriber characteristics.

During this time period, a total of 1,827 WA residents initiated DAA treatment for chronic HCV (131 per 100,000 population), representing an estimated 8.9% of WA residents living with chronic HCV. Based on the total population rather than the population living with chronic HCV, the highest initiation rate was among males (222 per 100,000 population) and those aged 40 to 49 years (197 per 100,000 population). The proportion of WA residents initiating treatment who were aged less than 50 years, increased from 28% in March to 44% in September 2016. Similar proportions of WA residents initiating treatment were categorised as Concession (49%) and General (51%) patients. The highest initiation rates were among residents in the Great Southern (316 per 100,000 population), Midwest (290 per 100,000 population), and Kimberley (282 per 100,000 population) regions.

The most commonly prescribed DAA treatment regimen was sofosbuvir + ledipasvir (55%), followed by sofosbuvir + daclatasvir (37%). While approximately equal proportions of WA residents were dispensed treatment through public hospital (51%) and community pharmacies (48%), the proportion of residents who were dispensed treatment from community pharmacies increased from 40% in July to 67% in September 2016. The majority of WA residents were dispensed DAA treatment under the Pharmaceutical Benefits Scheme (PBS) General Schedule (Section 85) (49%) and PBS Section 100 (S100) Highly Specialised Drugs (HSD) Public Program (50%). The majority of residents in the Kimberley region were dispensed treatment under the PBS S100 HSD Public Program (88%) while the majority of residents in the Great Southern and South West regions were dispensed treatment under the PBS General Schedule (76% and 73%, respectively).

Although approximately equal proportions of WA residents were prescribed DAA treatment by a GP (51%) or a specialist (49%), the proportion of residents who were prescribed treatment by a GP increased from 43% in March to 54% September 2016. The majority of residents in the Great Southern, Midwest, South West and Kimberley regions were prescribed treatment by a specialist (85%, 71%, 68% and 64%, respectively). During this period there were 201 prescribers for DAA treatment in WA and 66% of these were general practitioners (GPs). While prescribers most frequently treated only one patient, a higher proportion of specialists treated ten or more patients, compared to GPs (33% vs. 17%). The highest proportionate patient caseload was reported among prescribing GPs in the Kimberley region (50% treated ten or more patients) and among prescribing specialists in the Great Southern and Wheatbelt regions (100% and 50% respectively, treated ten or more patients).

## Abbreviations

ABS	Australian Bureau of Statistics
ASR(s)	Age standardised rate(s) expressed per 100,000 population
DAA	Direct acting antiviral
DoH	Department of Health, Western Australia
DVA	Department of Veterans' Affairs
ERP(s)	Estimated residential population(s)
GP(s)	General practitioner(s)
HCV	Hepatitis C virus
HSD	Highly Specialised Drugs
PBS	Pharmaceutical Benefits Scheme
r	Correlation coefficient
S100	Section 100
SA2	Statistical Area Level 2
WA	Western Australia

## Introduction and aims

On 1 March 2016, the following new direct acting antiviral (DAA) oral regimens were listed on the Pharmaceutical Benefits Scheme (PBS) for the treatment of chronic hepatitis C infection (HCV):

- sofosbuvir + ledipasvir
- sofosbuvir + daclatasvir ± ribavirin
- sofosbuvir + ribavirin
- sofosbuvir + pegylated interferon-alfa-2a + ribavirin.

In May 2016, the following regimen was also included:

- paritaprevir-ritonavir + ombitasvir + dasabuvir ± ribavirin.

The aim of this baseline report is to describe the number of people in Western Australia (WA) who initiated DAA treatment for chronic HCV from 1 March to 30 September 2016 by patient demographics, regimen, dispensing and prescriber characteristics.

## Methods

### Pharmaceutical Benefits Scheme (PBS) data

The Department of Health, WA (DoH) received a de-identified extract of PBS data on the number of prescriptions for HCV treatment supplied to WA residents from 1 March to 30 September 2016. The data were extracted by selected drugs used for treating HCV or by selected PBS item codes or indications, where necessary. The indication was identified from the Authority Code or Streamlined Authority Code where available. WA residents were identified from the patient postcode as recorded on the Medicare Enrolment file at the date of supply. The patient postcode to state mapping was updated based on Australia Post's ranges for each state and territory.

The data were analysed using the following PBS variables: patient identification number confidentialised, patient date of birth, patient sex, patient postcode, patient category, pharmacy type, prescriber ID confidentialised, prescriber derived major speciality, date of prescribing, date of supply, PBS item code, drug name, program code, streamlined authority code and authority code. Data on the patient's Aboriginality were not made available.

### Regional boundaries and population estimates

WA is divided into ten health administrative regions: three in the Perth metropolitan area (East, North and South), four in the Northern and Remote area (Goldfields, Kimberley, Midwest and Pilbara) and three in the Southern area (Great Southern, South West and Wheatbelt).

Population estimates used as denominators in the analyses were based on the mid-year population provided by the Australian Bureau of Statistics (ABS). The ABS calculates estimated residential populations (ERPs) at the Statistical Area Level 2 (SA2). Based on these population estimates, the Epidemiology Branch of the DoH derived postcode level population estimates. These postcodes are then grouped to defined health region boundaries. The population of each health region are then based on the sum of each postcode within that health region<sup>1</sup>.

## Interpreting the results

In this report, initiation of treatment is expressed as the number, proportion and rate of WA residents who initiated DAA treatment for chronic HCV. Age standardisation was utilised to control for differences in the size and age structure of various populations. Age standardised rates (ASRs) are calculated to take account of differences in age composition when rates for different populations are compared. Age specific rates were based on the specified age groups and calculated by dividing the number of initiations by the population of the same sex and age group. Initiation rates are based on the total population rather than the population living with chronic HCV and are annualised to allow for comparison over time. ASRs and age specific rates are expressed per 100,000 population. The 2001 Australian standard resident population from the ABS was used as the reference population for standardisation.

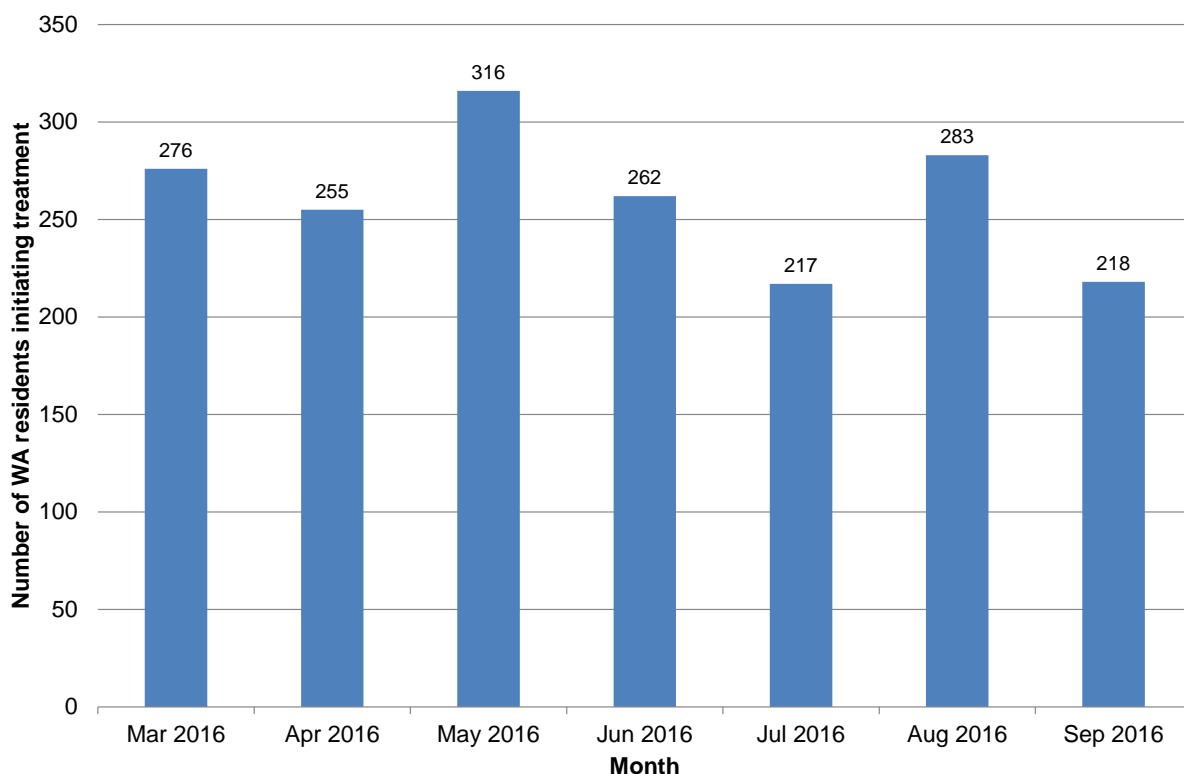
## Results

### DAA treatment initiations by patient demographics

In 2015, an estimated 20,549 WA residents were living with chronic HCV infection<sup>2</sup>. From March to September 2016, a total of 1,827 residents initiated DAA treatment for chronic HCV (131 per 100,000 population) (Figure 1). It is therefore estimated that 8.9% of residents living with chronic HCV in WA initiated DAA treatment from March to September 2016.

Based on the total population rather than the population living with chronic HCV, the highest initiation rate was among males and those aged 40 to 49 years (Table 1 and Table 2). The proportion of WA residents initiating treatment who were aged less than 50 years, increased from March to July before remaining relatively stable to September (Figure 2). Approximately equal proportions of residents were categorised as Concession and General patients (Table 3). The highest initiation rates were among residents in the Great Southern, Midwest and Kimberley regions (Figure 3). In most regions, high DAA treatment initiation rates were associated with historically high HCV notification rates ( $r=0.78$ ,  $n=10$ ,  $p=0.005$ ) (Figure 4).

**Figure 1 Number of WA residents initiating DAA treatment by month, March to September 2016**



**Table 1 Number, proportion and rate of WA residents initiating DAA treatment by sex, March to September 2016**

Age group (years)	WA residents		
	Number	% Total	Rate
Male	1,236	67.7%	222.3
Female	591	32.3%	108.9
<b>Total</b>	<b>1,827</b>	<b>100.0%</b>	<b>130.9</b>

Note: Rate = Annualised age standardised rate per 100,000 population.

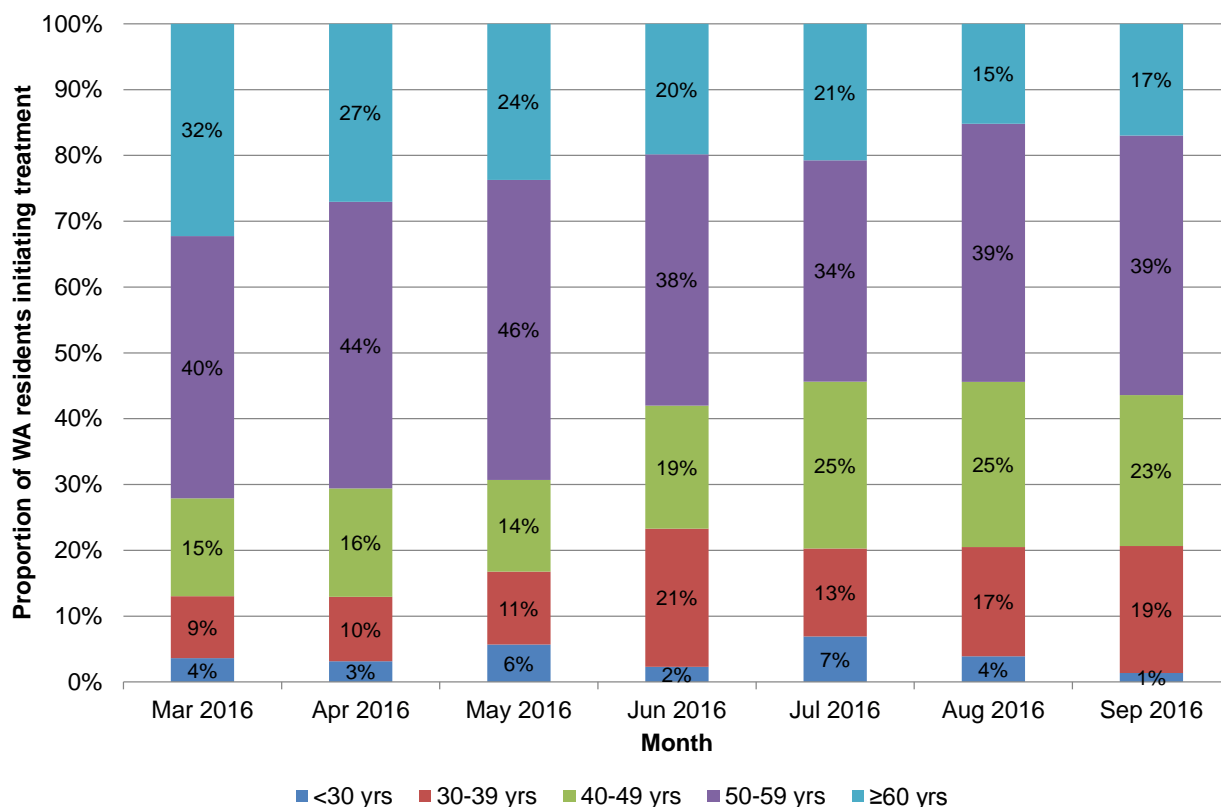
**Table 2 Number, proportion and rate of WA residents initiating DAA treatment by age group, March to September 2016**

Age group (years)	WA residents		
	Number	% Total	Rate
<20	0	0.0%	0.0
20-29	71	3.9%	32.6
30-39	259	14.2%	137.8
40-49	352	19.3%	196.9
50-59	735	40.2%	186.1
≥60	410	22.4%	166.0
<b>Total</b>	<b>1,827</b>	<b>100.0%</b>	<b>128.7</b>

Note: Rate = Annualised age specific rate per 100,000 population.



**Figure 2 Proportion of WA residents initiating DAA treatment by age group and month, March to September 2016**



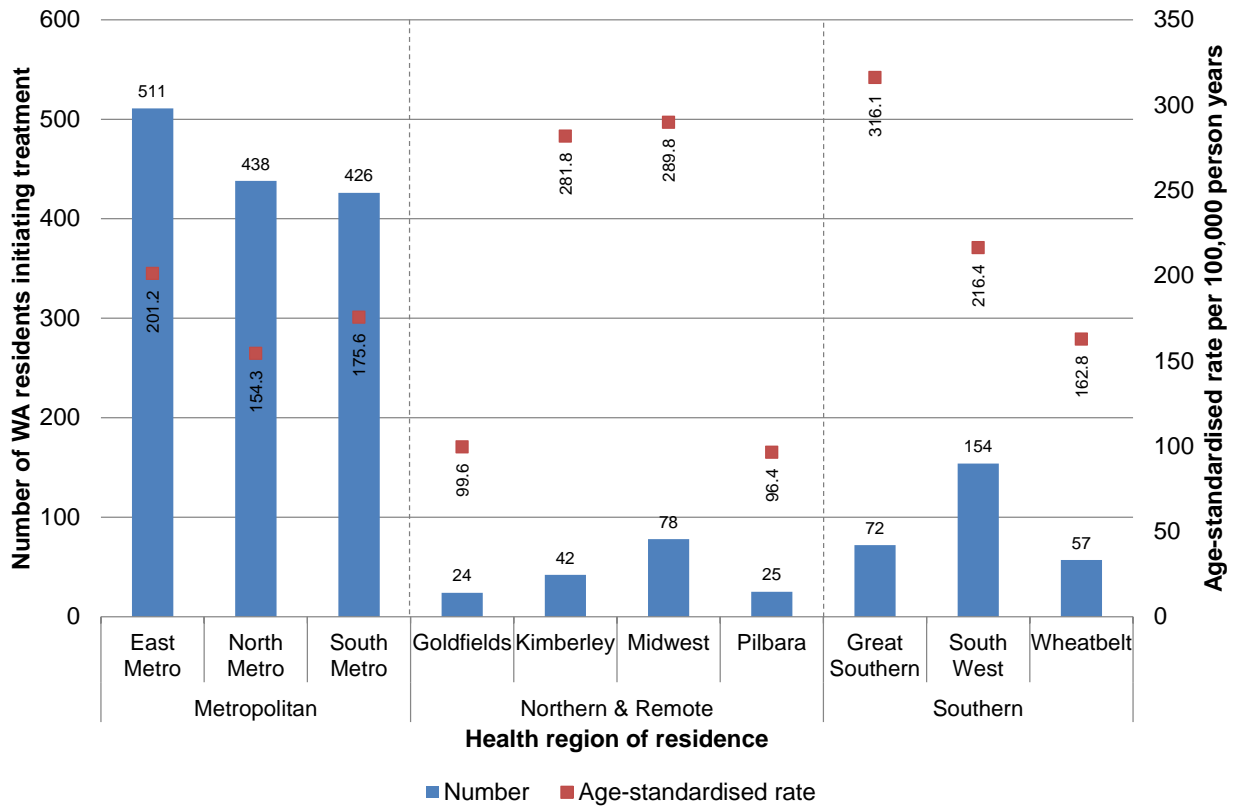
Note: The age groups <20 years and 20-29 years were merged due to small numbers.

**Table 3 Number of WA residents initiating DAA treatment by beneficiary status and age group, March to September 2016**

Beneficiary status	Age group (years)					Total	
	<30	30-39	40-49	50-59	≥60	Number	%
Concession	31	141	195	302	218	887	49%
General	40	118	157	433	190	938	51%
<b>Total</b>	<b>71</b>	<b>259</b>	<b>352</b>	<b>735</b>	<b>408</b>	<b>1,825</b>	<b>100%</b>

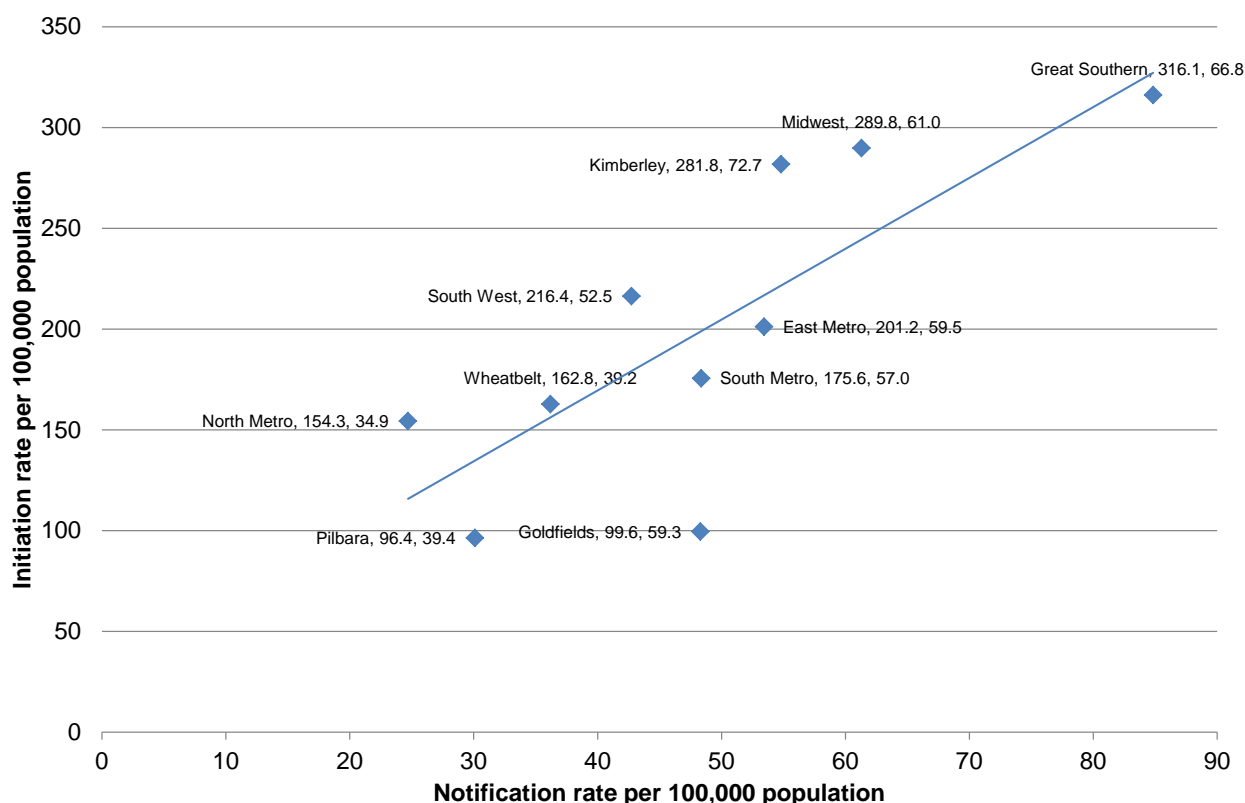
Note: The level of subsidy under the PBS depends on the patient's beneficiary status. Concessional status is for people who are eligible to receive government entitlements, including pensioners and low-income earners. Eligible veterans and their dependents holding a Department of Veteran's Affairs (DVA) health card are also entitled to medicines and additional pharmaceutical items at concessional rates under the Repatriation PBS. All other individuals are considered general beneficiaries and have a higher co-payment threshold. There were two people who were Repatriation PBS patients and these have been excluded from this table. The age groups <20 years and 20-29 years were merged due to small numbers.

**Figure 3 Number and rate of WA residents initiating DAA treatment by health region of residence, March to September 2016**



Note: Rate = Annualised age standardised rate per 100,000 population.

**Figure 4 Rate of WA residents initiating DAA treatment by rate of hepatitis C notifications and health region of residence, March to September 2016**



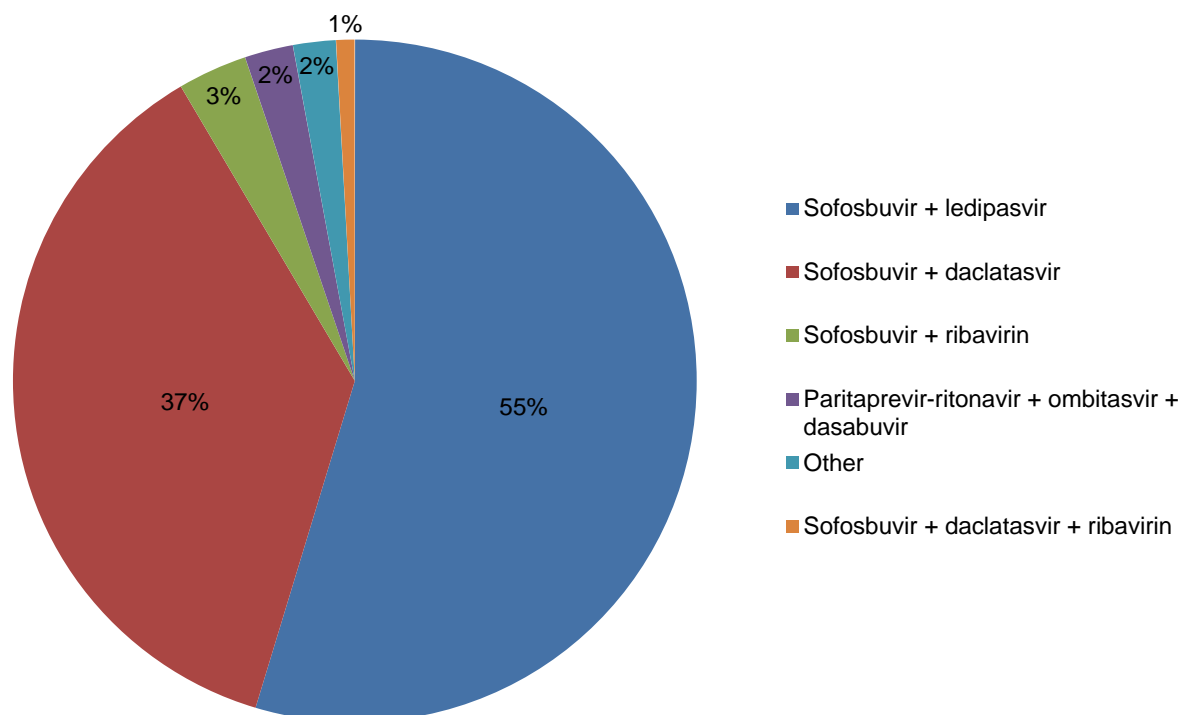
Note: Rate = Annualised age standardised rate per 100,000 population. Notification rate = Average age standardised notification rate per 100,000 population from 2013 to 2015.

### DAA treatment initiations by regimen and dispensing characteristics

Sofosbuvir + ledipasvir and sofosbuvir + daclatasvir were the two most commonly prescribed DAA treatment regimens in WA (Figure 5). These treatment regimens were available through the PBS General Schedule ('Section 85') and the PBS Section 100 (S100) Highly Specialised Drugs (HSD) Program to enable dispensing through community pharmacies as well as public hospital and private hospital pharmacies.

While approximately equal proportions of WA residents were dispensed DAA treatment through public hospital and community pharmacies over this time period, the proportion of residents who were dispensed treatment from community pharmacies increased from July to September 2016 (Table 4 and Figure 6). The majority of residents were dispensed treatment under the PBS General Schedule ('Section 85') and PBS S100 HSD Public Program (Table 5). The majority of residents in the Kimberley region were dispensed treatment under the PBS S100 HSD Public Program while the majority of residents in the Great Southern and South West regions were dispensed treatment under the PBS General Schedule (Figure 7).

**Figure 5 Proportion of WA residents initiating DAA treatment by regimen, March to September 2016**

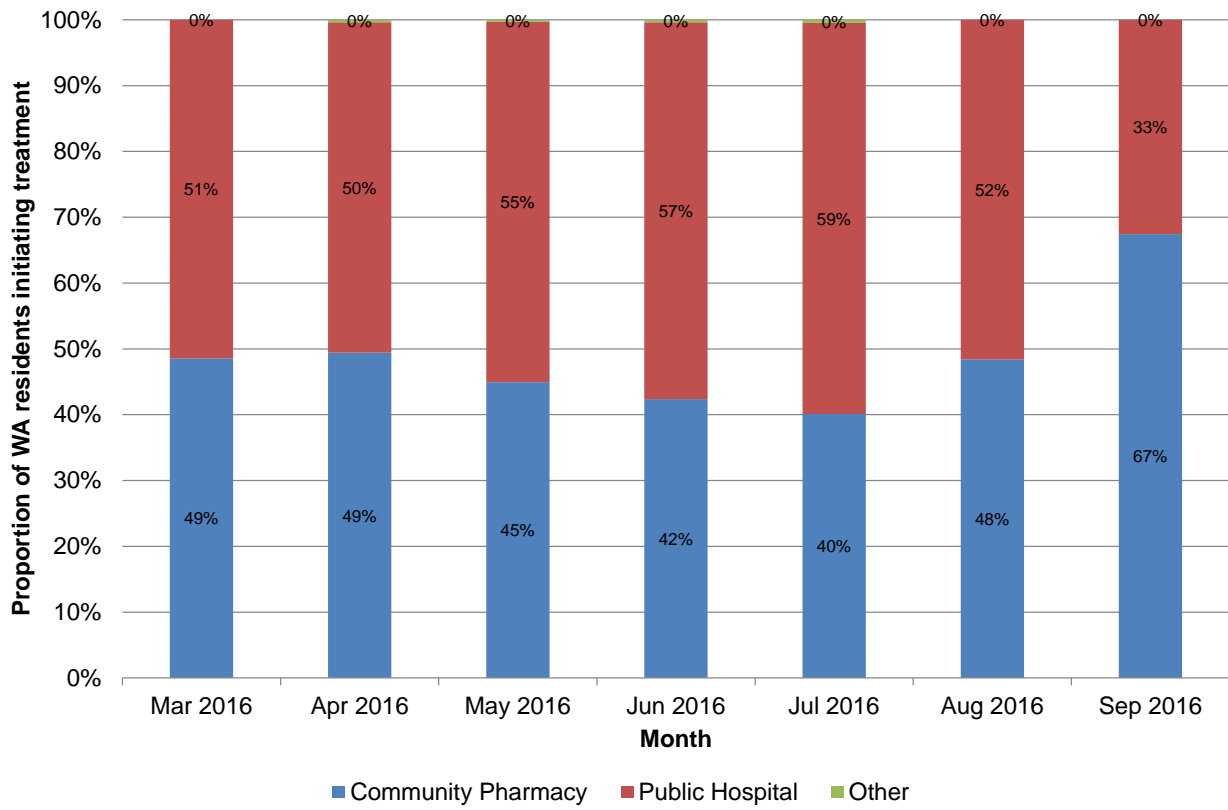


**Table 4 Number and proportion of WA residents initiating DAA treatment by pharmacy type, March to September 2016**

Pharmacy type	WA residents	
	Number	% Total
Community	884	48.4%
Public hospital	939	51.4%
Others	4	0.2%
<b>Total</b>	<b>1,827</b>	<b>100.0%</b>

Note: Others include private hospitals and friendly societies.

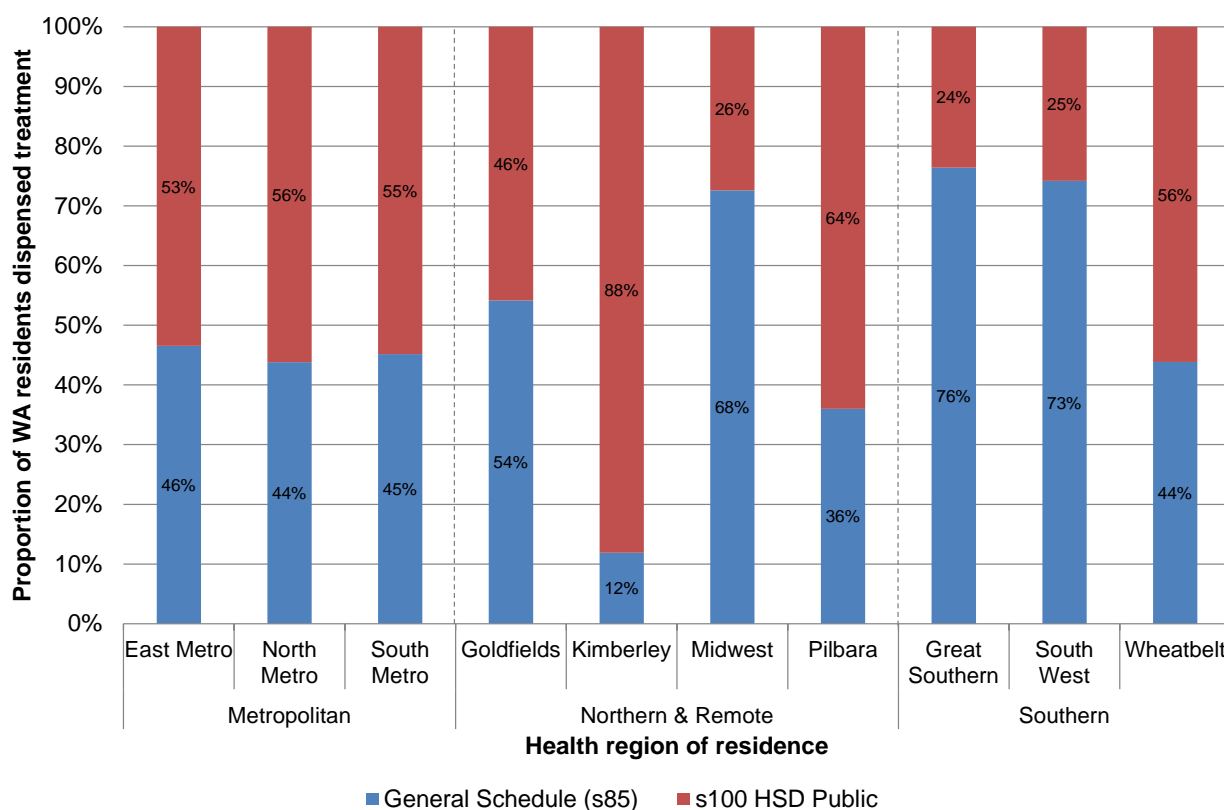
**Figure 6 Proportion of WA residents initiating DAA treatment by pharmacy type and month, March to September 2016**



**Table 5 Number and proportion of WA residents initiating DAA treatment by program code, March to September 2016**

Program code	WA residents	
	Number	% Total
General Schedule (s85)	890	48.7%
s100 HSD Public	920	50.4%
s100 HSD Private	17	0.9%
<b>Total</b>	<b>1,827</b>	<b>100.0%</b>

**Figure 7 Proportion of WA residents initiating DAA treatment by health region of residence and program code, March to September 2016**



Note: There were 17 WA residents who were dispensed DAA treatment through the s100 HSD Private code and these have been excluded from this graph.

## DAA treatment initiations by prescriber characteristics

Although approximately equal proportions of WA residents were prescribed DAA treatment by a GP or a specialist, the proportion of residents who were prescribed treatment by a GP increased from March to September 2016 (Table 6 and Figure 8). The majority of residents in the Kimberley, Midwest, Great Southern and South West regions were prescribed treatment by a specialist (Figure 9).

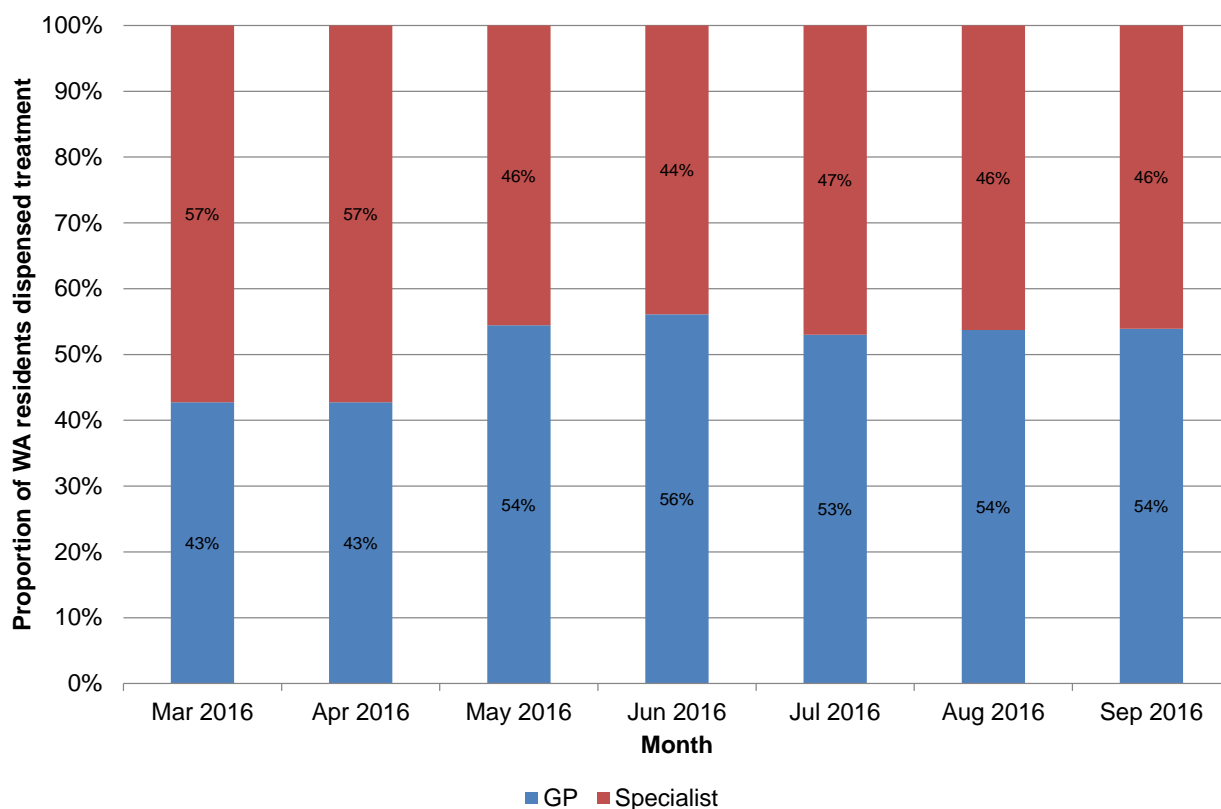
From March to September 2016, there were 201 prescribers for DAA treatment in WA and the majority of these were GPs (Table 7). The majority of specialists were gastroenterologists, hepatologists or general medicine specialists (Figure 10). While prescribers most frequently treated only one patient, a higher proportion of specialists compared to GPs, treated ten or more patients (Table 8). The highest proportionate patient caseload was reported among prescribing GPs in the Kimberley region and among prescribing specialists in the Great Southern and Wheatbelt regions (Figure 11 and Figure 12).

**Table 6 Number and proportion of WA residents initiating DAA treatment by prescriber type, March to September 2016**

Prescriber type	Number	% Total
GP	930	50.9%
Specialist	896	49.1%
<b>Total</b>	<b>1,826</b>	<b>100.0%</b>

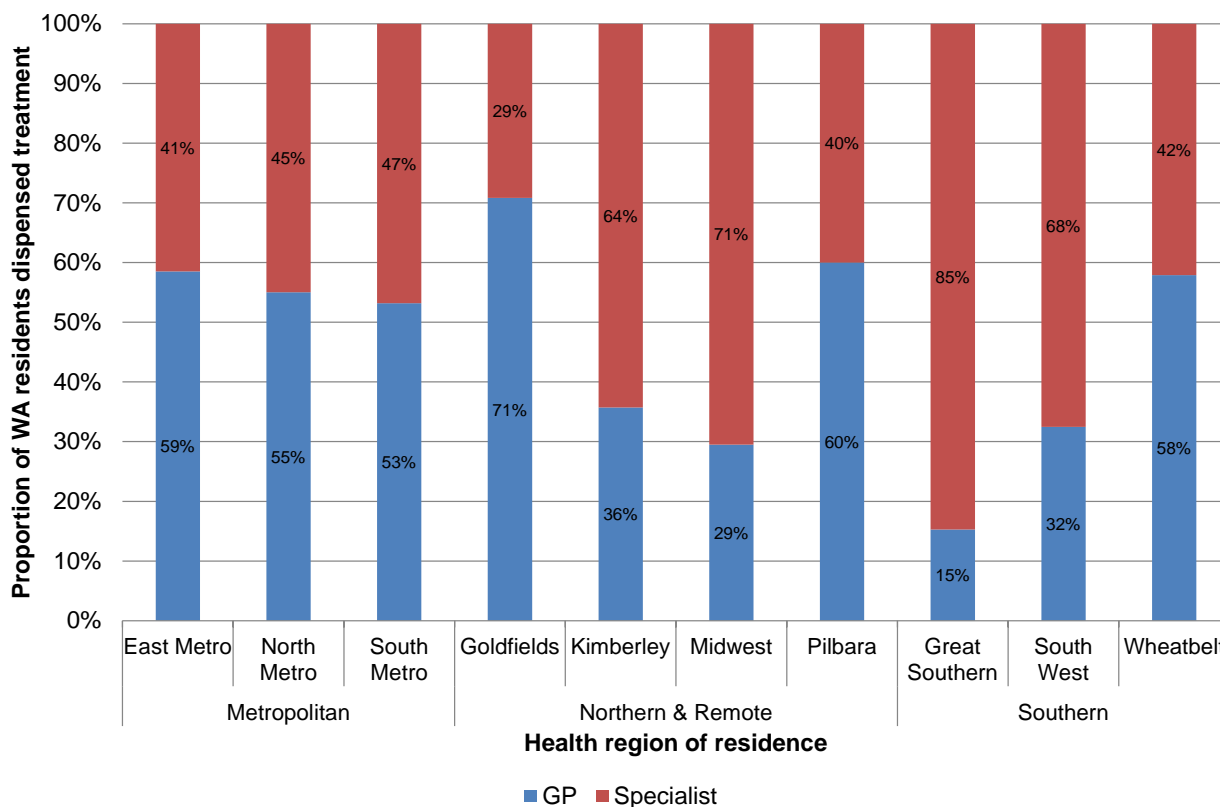
Note: The prescriber type is based on the prescriber's registered specialties and Medicare services. The prescriber type was recorded as unknown for one resident and this has been excluded from this table.

**Figure 8 Proportion of WA residents initiating DAA treatment by prescriber type and month, March to September 2016**



Note: The prescriber type is based on the prescriber's registered specialties and Medicare services. The prescriber type was recorded as unknown for one resident and this has been excluded from this figure.

**Figure 9 Proportion of WA residents initiating DAA treatment by health region of residence and prescriber type, March to September 2016**



Note: The health region of the patient residence was used as provider type address was unknown at the time of reporting. The prescriber type is based on the prescriber's registered specialties and Medicare services. The prescriber type was recorded as unknown for one resident and this has been excluded from this figure.

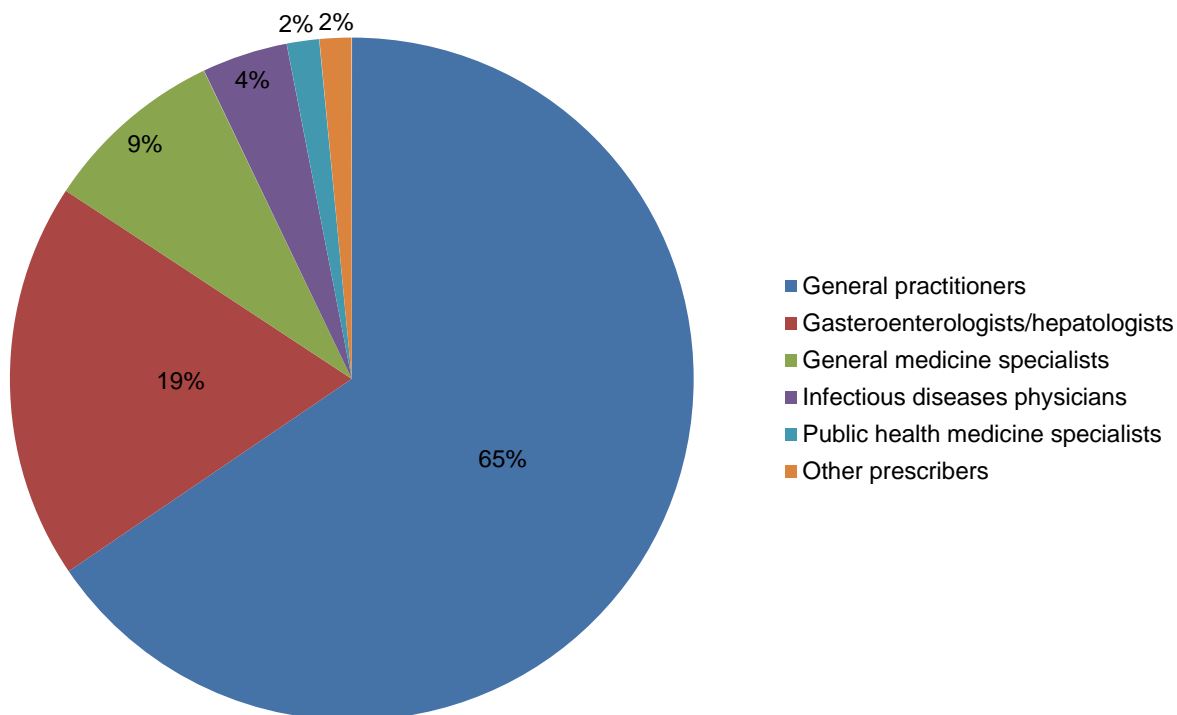
**Table 7 Number and proportion of prescribers of DAA treatment by prescriber type, March to September 2016**

Prescriber type	Number	% Total
GP	132	65.7%
Specialist	69	34.3%
<b>Total</b>	<b>201</b>	<b>100.0%</b>

Note: The prescriber type is based on the prescriber's registered specialties and Medicare services. As a result, a prescriber can appear in more than one category over time.



**Figure 10 Proportion of prescribers of DAA treatment by prescriber speciality, March to September 2016**

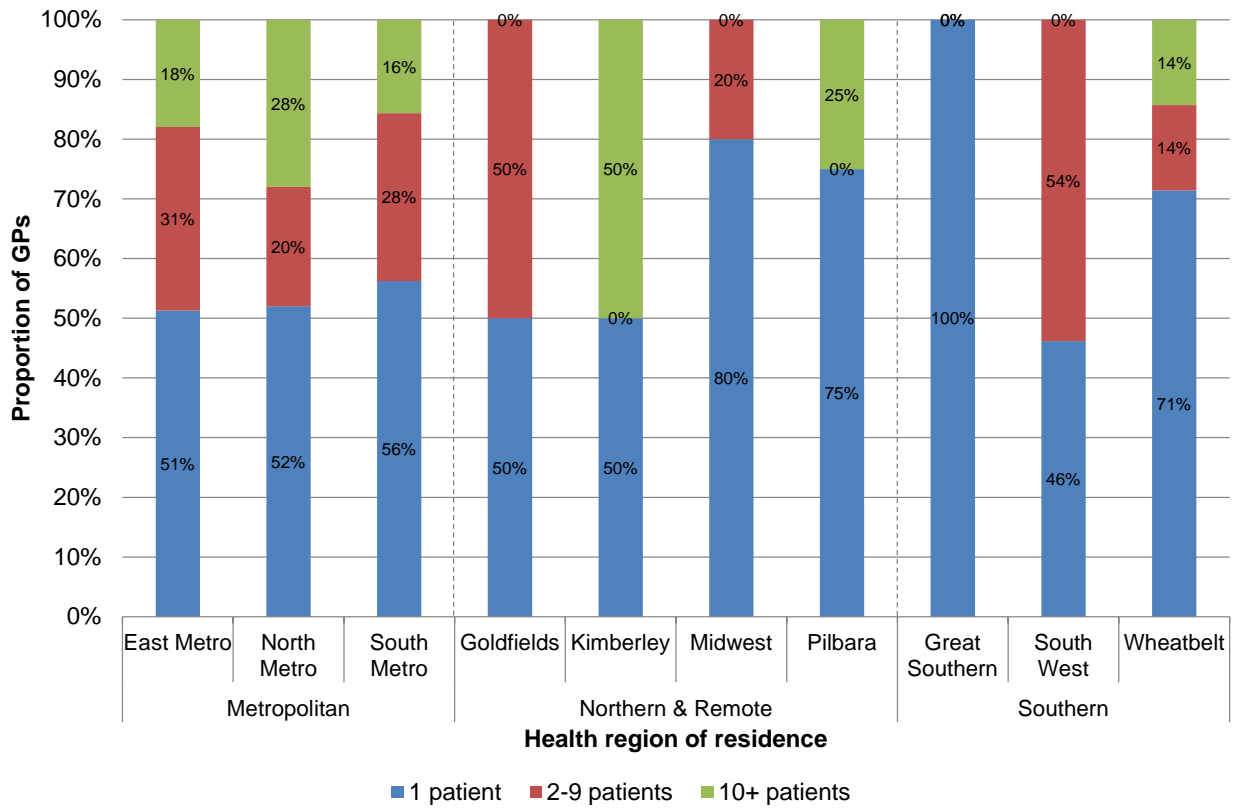


**Table 8 Case load of prescribers of DAA treatment by prescriber type, March to September 2016**

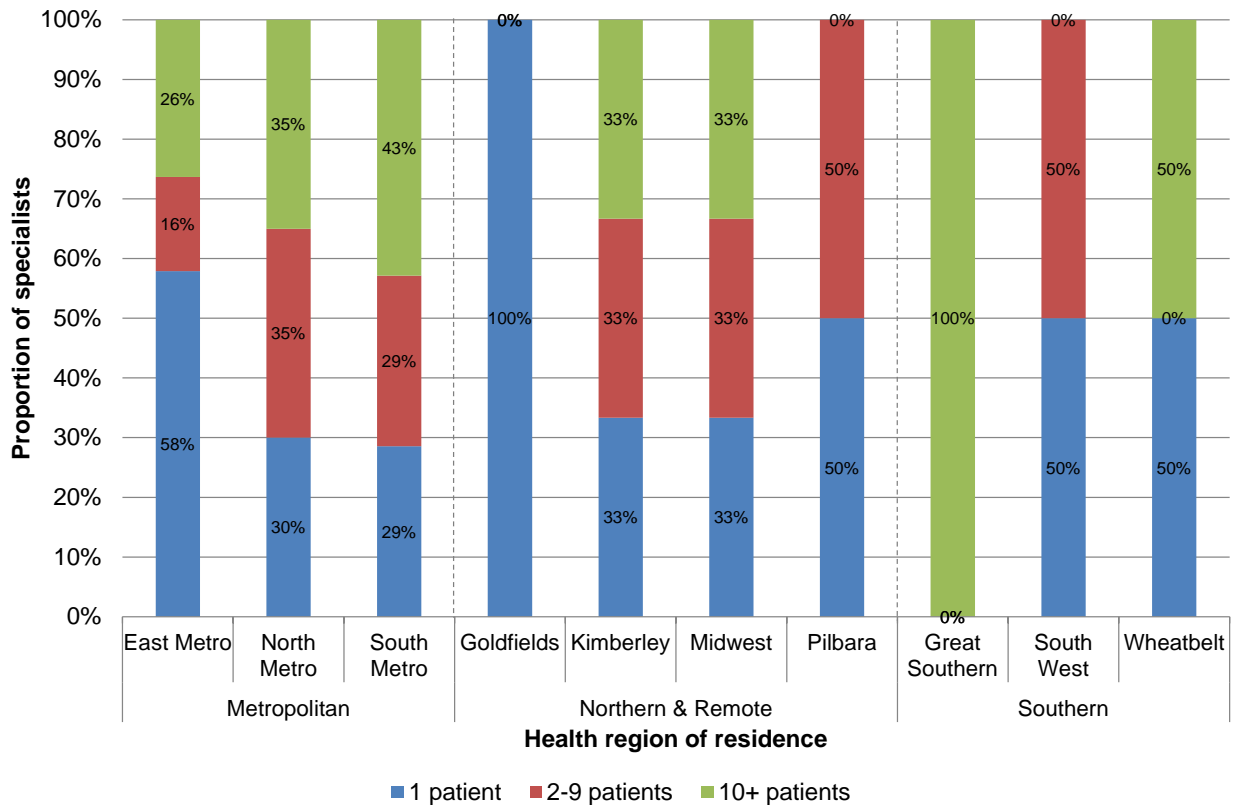
Prescriber type	Case load						Total	
	1 patient		2-9 patients		≥10 patients		Number	% Total
	Number	% Total	Number	% Total	Number	% Total		
GP	73	55.3%	37	28.0%	22	16.7%	132	100.0%
Specialist	28	40.6%	18	26.1%	23	33.3%	69	100.0%
<b>Total</b>	<b>101</b>	<b>50.2%</b>	<b>55</b>	<b>27.4%</b>	<b>45</b>	<b>22.4%</b>	<b>201</b>	<b>100.0%</b>

Note: The prescriber type is based on the prescriber's registered specialties and Medicare services. As a result, a prescriber can appear in more than one category over time.

**Figure 11 Proportion of GPs treating 1, 2 to 9 and 10 or more WA residents with DAA treatment by health region of residence, March to September 2016**



**Figure 12 Proportion of Specialists treating 1, 2 to 9 and 10 or more patients WA residents with DAA treatment by health region of residence, March to September 2016**



## References

1. Program Evaluation Unit, Department of Treasury WA (2016). Geographic boundaries in Western Australia. A guide for analysts and data users. Perth: Department of Treasury WA
2. The Kirby Institute (2016). Hepatitis B and C in Australia annual surveillance report supplement 2016. NSW: The Kirby Institute, UNSW Australia



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